

Application No.: 10/648,250

Docket No.: 2729-162

REMARKS

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the following remarks.

Claims 1-5 are pending in the application. The claims remain unchanged notwithstanding the Examiner's repeated rejection of claims 1-5 under 35 U.S.C. 103(a) as being obvious over *Suzuki* (U.S. Patent No. 4,930,995) in view of *Ahn* (U.S. Patent No. 6,568,914)

Applicants understand the Examiner's position that *Suzuki* does not disclose the claimed pulsation pressure reduction conduit, which is an essential element of the present invention, and the Examiner's reliance on *Ahn* for the missing claim feature. However, the structure and operation of the present invention are different from those of *Ahn*. The differences between *Ahn* and the present invention will be explained herein below with reference to attached *Exhibits C and D*.

First of all, please note that the structures disclosed in *Ahn* and the present invention were invented by the same inventor and filed by the same applicant. In fact, the invention of *Ahn* and the present invention were made in a series of improvement for the purpose of reducing the discharge pressure pulsation of the compressor. The present invention is an improvement over *Ahn* as described in the specification, at page 1, line 33 through page 2, line 7, which is reproduced below for the Examiner's convenience of review.

"To solve the above-described problem, as disclosed in U.S. Patent No. 6,568,914 to the applicant of the present invention, at least two discharge holes are formed at a discharge pipe so as to allow a predetermined phase difference at a position where refrigerants induced to a discharge pipe passage through the two discharge holes, meet, thereby minimizing an increase in pulsation pressure. In order to allow a predetermined phase difference between the respective refrigerants induced to a discharge pipe passage through the two discharge holes, the number, size, and position of each of the discharge holes should be determined theoretically or by a trial-error method, which is, however, not easy to carry out in practice."

According to the above passage, the invention of *Ahn*, although satisfactory for the purpose of minimizing pulsation pressure, still needs improvement.

Application No.: 10/648,250Docket No.: 2729-162

The present invention provides, among other things, a pulsation pressure reduction conduit which is both structurally and functionally different from that of *Ahn*.

More particularly, *Ahn* requires that at least two inlets 471, 472 for receiving the discharged refrigerant be provided in the discharge conduit 47 (pulsation pressure reduction conduit) in order to reduce the pulsation pressure. In contrast, in the present invention, a single inlet 49 for receiving the discharged refrigerant is required in the pulsation pressure reduction conduit 48, and the inlet 49 of the pulsation pressure reduction conduit 48 is positioned at a point where the pressure pulsations of the discharged refrigerant from the respective discharge holes 43 are substantially equal. This structural difference between *Ahn* and the present invention is also summarized in the first two rows of the Table in attached *Exhibit C*.

Due to the above mentioned structural difference, *Ahn* and the present invention function differently. Specifically, two refrigerant flows discharged respectively through the *Ahn* discharge holes 471, 472 meet, at the discharge pipe 47, while having a phase difference. Therefore, an increase in the pulsation pressure due to a beat phenomenon caused when the two flows meet can be suppressed. See column 7, lines 55-60 of *Ahn*. In contrast, since the inlet 49 of the pulsation pressure reduction conduit 48 of the present invention is positioned at a point where the pressure pulsations of the discharged gas from the respective discharge holes 43 are substantially equal, the overall amplitude of the discharge pressure pulsation can be reduced, as described in the specification, e.g., at page 5, lines 25-30. This functional difference between *Ahn* and the present invention is also summarized in the third row of the Table in attached *Exhibit C*. The effects achieved by *Ahn* and the present invention are summarized in the last row of the Table in attached *Exhibit C*.

It should be now clear that the claimed invention is drawn to a compressor comprising, among other things, a pulsation pressure reduction conduit having a single inlet. The applied references, especially *Ahn*, do not teach or suggest the single inlet of the present invention and,

Application No.: 10/648,250Docket No.: 2729-162

therefore, fail to render the present invention obvious.

The applied references also fail to teach or suggest the unique position of the inlet of the pulsation pressure reduction conduit in accordance with the present invention, i.e., at the position where the pressure pulsations of the discharged gas from the discharge holes are equal. Applicants respectfully submit that the position of the inlet of the present invention is not disclosed in or suggested by the applied references, especially *Ahn*. In particular, the reference of *Ahn*, while disclosing using attenuating cavities to reduce pulsation pressure, merely shows in the drawings that the inlet of the discharge hole is positioned in the center area of the discharge chamber. However, this teaching does not necessarily mean that the *Ahn* inlet is positioned where the pressure pulsations of the discharged gas from the discharge holes are equal. As illustrated in the explanatory drawing of attached *Exhibit D*, and described on page 6, lines 16-26 of the specification of the present invention, the respective distances between the discharge holes (e.g., 43) and the inlet (e.g., 49) of the pulsation pressure reduction conduit (e.g., 48) may be different depending on numerous factors, including ① the relative positions of the respective discharge holes, ② the overall configuration (asymmetry) of the discharge chamber, and ③ the volume of a space occupied by the pulsation pressure reduction conduit (e.g., 48) inside the discharge chamber. In other words, the central position of the inlet shown in the drawings of *Ahn* does not necessarily satisfy the equal pressure pulsation requirement of the present invention, and therefore, does not constitute an enabling disclosure of the claimed inlet's position where the pressure pulsations of the discharged gas from the discharge holes are equal.

Accordingly, Applicants respectfully submit that the applied references, especially *Ahn*, do not teach or suggest the single inlet, as well as its unique position, of the present invention and, therefore, fail to render the present invention obvious. (For the Examiner's information, the European Patent Office has found the present invention patentable over the art.)

Withdrawal of the 35 U.S.C. 103(a) rejection of claims 1-5 in view of the above is

Application No.: 10/648,250**Docket No.: 2729-162**

respectfully requested.

Each of the Examiner's rejection and objection has been traversed/overcome. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN & BERNER, LLP



Randy A. Noranbrock
Registration No. 42,940

for:

Benjamin J. Hauptman
Registration No. 29,310

USPTO Customer No. 22429
1700 Diagonal Road, Suite 310
Alexandria, VA 22314
(703) 684-1111 BJH/KL/klb
(703) 518-5499 Facsimile
Date: April 20, 2005

CERTIFICATION OF FACSIMILE TRANSMISSION
I HEREBY CERTIFY THAT THIS PAPER IS BEING FACSIMILE TRANSMITTED
TO THE PATENT AND TRADEMARK OFFICE ON THE DATE SHOWN BELOW

 Kindra Bryant
TYPE OR PRINT NAME OF PERSON SIGNING CERTIFICATION

SIGNATURE

April 20, 2005
DATE

703-872-9306
FACSIMILE NUMBER

Exhibit C

**Table showing the differences
between U.S. Patent No. 6,568,914 (*Ahn*) and the present invention**

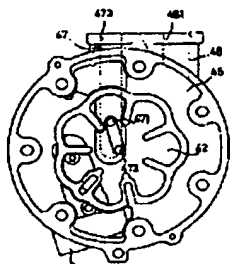
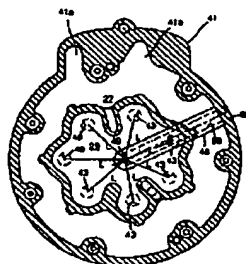
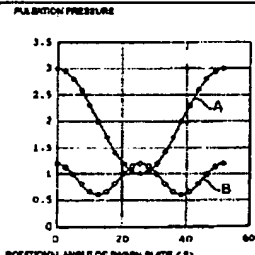
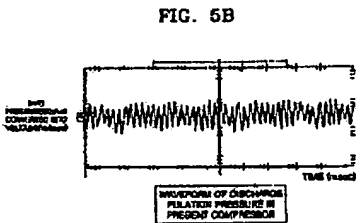
	U.S. Patent No. 6,568,914 (<i>Ahn</i>)	Present Invention
Figure		
Inlet(s) of pulsation pressure reduction conduit	At least two discharge holes 471, 472 are separated from the discharge hole 512 of the valve plate 51 (FIG. 3 of <i>Ahn</i>).	An inlet 49 of the pulsation pressure reduction conduit 48 is positioned at a position where the pressure pulsations of the discharged gas from the respective discharge holes 43 are substantially equal
Operation	The refrigerant flows discharged from each of the first and second discharge holes 471, 472 meet, at the discharge pipe 47, while being out of phase such that an increase in the pulsation pressure due to a beat phenomenon of the flows can be suppressed. Column 7, lines 55-60 of <i>Ahn</i> .	The inlet 49 of the pulsation pressure reduction conduit 48 is positioned at a point where the pressure pulsations of the discharged gas from the respective discharge holes 43 are substantially equal to reduce the overall amplitude of the discharge pressure pulsation and to reduce pulsation pressure.
Effectiveness		

Exhibit D**Explanatory Drawing**